Ontario

ESTABLISHMENT AND PRODUCTION COSTS FOR TENDER FRUIT IN ONTARIO

2002 ECONOMIC REPORT

Publication 817

MINISTRY OF AGRICULTURE AND FOOD

104-01957/

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Establishment and Production Costs for Tender Fruit in Ontario
2002 Economic Report

Editors
Ken Slingerland, Tender Fruit and Grape Specialist, and John Molenhuis, Business Analysis and Cost of Production Lead, OMAF

Acknowledgements
This publication was prepared with the help of the following: Hugh Fraser, Agriculture Engineer, Neil Carter, Tender Fruit and Grape IPM Specialist, Leslie Huffman, Weed Management-Horticultural Program Lead, John Anderson, Acting Business Analysis and Cost of Production Program Lead (2003), OMAF; Karl Evans, Kraft Canada, St. Davids; Bill Lay, Research Technician, Department of Plant Agriculture, University of Guelph; Adrian Huisman, Ontario Tender Fruit Producers' Marketing Board and its grower members who participated in the survey. Special thanks to Karen Van Weerden and Nikki Huggins for their survey work

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Published by the
Ontario Ministry of Agriculture and Food
© Queen's Printer for Ontario, 2003
Toronto, Canada
ISBN 0-7794-5511-8
11-03-1.2M

Cette publication hautement spécialisée n'est disponible qu'en anglais en vertu du réglement 411/97, qui en exempte l'application de la *Loi sur les services en français*. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère de l'Agriculture et de l'Alimentation au numéro 1 877 424-1300.

1. Introduction

This report tries to reflect management practices growers use today. Soil conditions and the unique micro climates of Ontario result in many different grower practices in training systems, cultivar selections, planting densities and pest management programs.

Objectives

The tender fruit industry uses the cost of establishment and cost of production models extensively to determine the profitability of the industry in order to make business decisions and planting plans. Growers can use the input costs as general guidelines to identify strengths and weaknesses in their own business.

Methods and procedures

The information used in this report was derived from previous economic reports, the Ontario Tender Fruit Producers Marketing Board, processors, surveys with growers, and data from researchers, extension specialists and agribusiness.

Input costs were organized into variable and measurable fixed costs. Variable costs include fertilizers, pesticides, hired labour, tractor and machine costs, and interest on operating capital.

Measurable fixed costs are interest on investment, depreciation and other overhead cost items such as a portion of utilities, equipment storage, insurance, accounting, farm vehicles and general maintenance.

Assumptions

The contribution margin was obtained by subtracting the total variable costs from the gross income. Contribution margin is the amount of funds that the crop contributes to cover fixed costs and provide returns for owner management and investment.

Hired labour, including offshore labour, was charged at $8.55 per hour, which includes benefits (Workplace Safety and Insurance Premiums, Employment Insurance, Canada Pension Plan and an allowance for additional costs of air flight, housing and local transportation).

Hired machine operator labour was charged at $13 per hour, including benefits.

Machinery and equipment costs were based on a commercial farm size of 50 acres. Machinery costs were calculated based on the purchase price for 2002, useful life, annual use and trade-in value.

Interest on investment was calculated at 5.0%, which is the interest rate used in the return on investment calculations for the Ontario Farm Management Analysis Project.

The interest rate applied to the operating capital was based on the average 5-year fixed lending rate of 6.0%.

Interest on operating capital was compounded annually until the orchard generates revenue to, first, pay down the accumulated interest and then the outstanding principal. Operating capital includes cost of materials, fuel, repairs, labour and other cash items but does not include farm overhead expenses.

Fuel costs were based on the size of each tractor, truck or self-propelled machine used in the production operation. The following farm-gate fuel prices were used: gasoline 60.9 cents / litre and diesel 55.0 cents / litre. Fuel costs are net of all 2002 provincial and federal rebates.

Yields were given as an attainable average to reflect the best management practices of commercial production.

Data were obtained through consultation with producers, extension specialists, researchers, processors and the Ontario Tender Fruit Producers' Marketing Board.

The prices listed for fresh market Ontario grown tender fruit were the 2001–02 averages obtained through the Ontario Tender Fruit Producers' Marketing Board, net of shipper commission, service charges and containers. Prices for unregulated crops, nectarines and sweet cherries were the 2001–02 averages obtained from Vineland Growers' Cooperative, net of shipper commission, service charges and containers.

The price listed for processing sour cherries was the 2000–01 average obtained through the Ontario Tender Fruit Producers' Marketing Board, net of license fees. The 2002 price was not used due to the short crop in 2002 and an unusually high price for sour cherries.

The prices listed for processing peaches and pears were the 2001–02 averages obtained through Kraft Canada, St. Davids, net of license fees.

The yield listed for processing pears was the 1999–2000 average obtained through Kraft Canada, St. Davids. The 2002 yield was not used due to a rare, late-spring frost, and the 2001 yield was not used due to severe, dry growing conditions, which reduced the crop significantly in both years. Yield data for both fresh and processing pears were obtained from higher density orchards using best management practices.

The establishment of the peach orchard covers a 4.5 year period: a half year for soil preparation, one year for planting and three years to grow the tree to full cropping potential.

High density peach production is still being developed in grower trials. Some of the costs and yields have been extrapolated for this model. There is no data on long-term orchard production and orchard life.

Table 1–1. Establishment period

Crop	Trees per acre	Establishment period (years)
Fresh market peach	218	4.5
Processing peach	218	4.5
Processing peach - high density	403	4.5
Sour cherries	125	6.5
Sweet cherry - dwarf	218	6.5
Plum - European	150	6.5
Plum - Japanese	150	8.5
Apricot	150	8.5
Pear - fresh market	201	8.5
Pear - processing	201	8.5

Items not included in this report

Land costs and carrying charges were not included as part of the establishment or production costs because of the extreme variance in land prices.

Land ownership and rental prices vary considerably from farm to farm depending on road location, services, soil types, access to water and the potential for urban development or establishing a fruit market. For this reason a space was provided for the user to insert land rental cost in the variable cost section and land ownership in the fixed cost section.

Land improvements such as laser land levelling were not included in the production costs. Each farm varies as to its individual requirements, thus additional preplant costs may need to be added.

A management allowance was not included as a cost.

Crop insurance was not calculated in the cost of production. It can be included in the individual grower's cost of production.

The cost of establishment of other tender fruit crops is available on request. They include Processing Peach, Processing Peach - High Density, Fresh Bartlett Pear, Sweet Cherry - Dwarf, and Japanese

Plum. Contact the Agricultural Information Contact Centre: 1-877-424-1300 or email ag.info@omaf.gov.on.ca

Changes from the 1997 Economic Report

In the preplant year, tile drainage was included as a land improvement and also included in the breakeven and profitability worksheet.

Irrigation annual costs were included as a variable cost for some of the tender fruit crops. Irrigation was included in the fixed costs for the same tender fruit crops.

Consulting fees were included but rates varied depending on crop and whether it was full or partial service.

Additional items used for some crops included foliar sprays, leaf analysis, mulch, bees for pollination and bird control.

Some grower practices have changed slightly, and more growers cultivate their orchards and use an annual cover crop instead of using a permanent grass when the trees are mature.

Trees per acre have increased with new plantings. Many new sweet cherry plantings are now using dwarfing rootstocks.

Cold storage and packing equipment for fresh market crops have been included under the fixed costs in the annual estimated costs of production. The fixed costs start in the first year of harvest to reflect the first year that cold storage and packing equipment would be built and used. No costs were allocated to processing crops since they do not require the use of on-farm cold storage or packing equipment.

The cost for other overhead under fixed costs for processing crops has been reduced to reflect more accurately the building requirements for processing crops compared to fresh market crops.

Current practices

The assumptions reflect the current practices in the industry and do not necessarily represent recommendations from the contributors. Newer plantings of tender fruits may involve higher tree densities, dwarf rootstocks, alternative training systems, new varieties, and other innovative cultural practices.

The authors assume no liability or responsibility as a result of the reader relying or acting on the information in this report. Any use or misuse of the information is the sole responsibility of the reader.

2. Fresh Market Peach

Preplant year

Table 2–1. Preplant year: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Machine labour, 4.2 hrs		55
Custom plowing		30
Fertilizer 10-20-20, 40 kg		15
Cover crop seed		24
Machine repairs, maintenance		23
Fuel		27
Interest on operating capital		46
Consulting fees		25
Tile drainage		1295
Miscellaneous (soil test)		30
Land rental		
Total variable costs		**1569**
Fixed costs		
Machine depreciation		34
Machine investment interest		26
Other overhead		220
Land ownership		
Measurable fixed costs		**280**
Total measurable costs		**1849**

Table 2–2. Preplant year: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Subsoiling (1x)	0.7	9	7	7	23
Discing (2x)	1.4	18	18	20	57
Cultivating (1x)	0.7	9	8	9	27
Fertilizing (1x)	0.7	9	7	8	25
Seeding cover crop (1x)	0.7	9	10	15	33
Total machine labour	**4.2**	**55**	**50**	**60**	**165**

* includes maintenance, fuel and repair

Planting year

Table 2–3. Planting year: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 29 hrs		248
Machine labour, 18.3 hrs		238
Trees (218 trees per acre)		1875
Fertilizer 10-20-20, 40 kg		15
Insecticides		11
Fungicides		16
Herbicides		43
Cover crop seed		24
Machine repairs, maintenance		108
Fuel		116
Interest on operating capital		259
Consulting fees		25
Miscellaneous (tree paint)		25
Land rental		
Total variable costs		**3003**
Fixed costs		
Machine depreciation		120
Machine investment interest		82
Other overhead		440
Land ownership		
Measurable fixed costs		**642**
Total measurable costs		**3645**

Table 2–4. Planting year: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Marking, planting trees	13	111	0	0	111
Pruning	7	60	0	0	60
Weed control - hoeing	3	26	0	0	26
Painting trees	6	51	0	0	51
Total hand labour	**29**	**248**	**0**	**0**	**248**
Machine labour					
Pick up trees	0.5	7	8	5	19
Planting trees (tree planter)	2.0	26	20	19	65
Planting trees (1/2 ton truck)	2.0	26	33	19	77
Discing (2x)	1.4	18	18	21	57
Cultivating (3x)	2.1	27	20	17	65
Fertilizing (1x)	0.7	9	7	9	25
Seeding cover crop (1x)	0.7	9	10	15	33
Mowing (4x)	2.8	36	35	30	102
Weed spraying (2x)	1.4	18	14	11	43
Pesticide spraying (5x)	2.0	26	35	38	99
Subsoiling/aerating (1x)	0.7	9	4	7	20
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**18.3**	**238**	**224**	**202**	**664**

* includes maintenance, fuel and repair

Second year

Table 2–5. Year 2: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 18 hrs		154
Machine labour, 15.1 hrs		196
Trees (2% replacement)		46
Ammonium nitrate, 25 kg		8
Muriate of potash, 25 kg		7
Insecticides		11
Fungicides		16
Herbicides		43
Cover crop seed		24
Machine repairs, maintenance		87
Fuel		92
Interest on operating capital		319
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**1060**
Fixed costs		
Machine depreciation		103
Machine investment interest		75
Other overhead		440
Land ownership		
Measurable fixed costs		**618**
Total measurable costs		**1678**

Table 2–6. Year 2: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	10	86	0	0	86
Defruiting	8	68	0	0	68
Total hand labour	18	154	0	0	154
Machine labour					
Replanting trees	2.0	26	20	19	66
Discing (1x)	0.7	9	12	17	37
Cultivating (2x)	1.4	18	14	14	46
Fertilizing (2x)	1.4	18	14	13	45
Seeding cover crop (1x)	0.7	9	10	15	34
Mowing (4x)	2.8	36	36	31	103
Weed spraying (2x)	1.4	18	14	11	43
Pesticide spraying (5x)	2.0	26	35	38	100
Subsoiling/aerating (1x)	0.7	9	4	7	20
Orchard maintenance	2.0	26	19	13	59
Total machine labour	**15.1**	**196**	**179**	**178**	**553**

* includes maintenance, fuel and repair

Third year

Table 2–7. Year 3: Estimated cost of establishment

2.64 ton (33% yield)	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 76 hrs		650
Machine labour, 21.4 hrs		278
Trees (1% replacement)		23
Ammonium nitrate, 80 kg		26
Muriate of potash, 80 kg		23
Insecticides		60
Fungicides		32
Herbicides		43
Cover crop seed		24
Machine repairs, maintenance		108
Fuel		138
Interest on operating capital		426
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**1887**
Fixed costs		
Machine depreciation		126
Machine investment interest		90
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**856**
Total measurable costs		**2743**
Contribution margin		
Gross income ($968/ton)		2556
Total variable costs		1887
Contribution margin (no land costs)		**669**

Table 2–8. Year 3: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	15	128	0	0	128
Thinning	17	145	0	0	145
Harvesting	22	188	0	0	188
Grading and packing	22	188	0	0	188
Total hand labour	**76**	**650**	**0**	**0**	**650**
Machine labour					
Replanting trees	1.0	13	11	13	37
Discing (1x)	0.7	9	12	16	37
Cultivating (2x)	1.4	18	14	13	45
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (5x)	3.5	46	40	32	118
Weed spraying (2x)	1.4	18	13	10	42
Pesticide spraying (9x)	3.6	47	48	45	140
Distribute and collect containers	4.0	52	35	21	108
Delivery	1.0	13	28	21	62
Subsoiling/aerating (1x)	0.7	9	4	7	19
Orchard maintenance	2.0	26	19	12	57
Total machine labour	**21.4**	**278**	**246**	**216**	**740**

* includes maintenance, fuel and repair

Fourth year

Table 2–9. Year 4: Estimated cost of establishment

5.28 ton (66% yield)	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 148 hrs		1265
Machine labour, 25.8 hrs		335
Trees (1% replacement)		23
Ammonium nitrate, 100 kg		32
Muriate of potash, 100 kg		29
Insecticides		120
Fungicides		64
Herbicides		25
Cover crop seed		24
Machine repairs, maintenance		127
Fuel		173
Interest on operating capital		434
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**2709**
Fixed costs		
Machine depreciation		145
Machine investment interest		104
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**889**
Total measurable costs		**3598**
Contribution margin		
Gross income ($968/ton)		5111
Total variable costs		2709
Contribution margin (no land costs)		**2402**

Table 2–10. Year 4: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	30	257	0	0	257
Thinning	34	291	0	0	291
Harvest	44	376	0	0	376
Grading and packing	40	342	0	0	342
Total hand labour	**148**	**1265**	**0**	**0**	**1265**
Machine labour					
Replanting trees	1.0	13	11	12	36
Discing (1x)	0.7	9	11	16	36
Cultivating (2x)	1.4	18	14	12	44
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (5x)	3.5	46	40	31	117
Weed spraying (2x)	1.4	18	13	10	41
Pesticide spraying (9x)	3.6	47	48	44	139
Distribute, collect containers	7.4	96	63	37	197
Delivery	2.0	26	55	43	124
Subsoiling/aerating (1x)	0.7	9	3	6	19
Orchard maintenance	2.0	26	18	11	56
Total machine labour	**25.8**	**335**	**300**	**249**	**884**

* includes maintenance, fuel and repair

Annual cost

Table 2–11. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 8 ton
Hand labour, 220 hrs		1881
Machine labour, 31 hrs		403
Ammonium nitrate, 125 kg		40
Muriate of potash, 125 kg		36
Foliar fertilizer - crop booster		7
Insecticides		180
Fungicides		97
Herbicides		30
Cover crop seed		24
Machine repairs, maintenance		146
Fuel		213
Interest on operating capital		193
Bird control		0
Consulting fees		25
Irrigation		100
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**3407**
Fixed costs		
Machine depreciation		166
Machine investment interest		114
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**920**
Total measurable costs		**4327**
Contribution margin		
Gross income ($968 per ton)		7744
Total variable costs		3407
Contribution margin (no land costs)		**4337**

Table 2–12. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	45	385	0	0	385
Raking brush	3	26	0	0	26
Thinning	50	428	0	0	428
Harvest	68	581	0	0	581
Grading and packing	54	462	0	0	462
Total hand labour	**220**	**1881**	**0**	**0**	**1881**
Machine labour					
Brush removal	1.2	16	11	7	34
Cultivating (3x)	2.1	27	20	16	64
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (5x)	3.3	43	39	31	113
Weed spraying (2.5x)	1.8	23	17	12	52
Pesticide spraying (9x)	3.6	47	48	45	140
Distribute and collect containers	11.2	146	97	59	302
Delivery	3.0	39	83	64	186
Subsoiling/aerating (1x)	0.7	9	3	7	19
Orchard maintenance	2.0	26	19	12	57
Total machine labour	**31.0**	**403**	**359**	**280**	**1043**

* includes maintenance, fuel and repair

Total establishment cost

Table 2–13. Total establishment cost

	Actual	Budget
Preplant		1849
Planting		3645
Year 2		1678
Year 3		2197
Year 4		2559
Total		**11928**

Excludes harvest, packing and delivery costs and does not include revenues for years 3 and 4. Does not include land costs.

Break even point

Table 2–14. Break even and profitability worksheet at 8.0 ton/acre yield

Year	Yield (%)	Revenue ($)	Variable costs ($)	Fixed costs ($)	Total ($)	Net cash flow ($)	Accum. profit ($)
Preplant	0%	0	1569	280	1849	-1849	-1849
Planting	0%	0	3003	642	3645	-3645	-5494
2	0%	0	1060	618	1678	-1678	-7172
3	33%	2556	1887	656	2543	13	-7159
4	66%	5111	2709	689	3398	1713	-5446
5	100%	7744	3560	920	4480	3264	-2182
6	**100%**	**7744**	**3309**	**920**	**4229**	**3515**	**1332**
7	100%	7744	3043	920	3963	3781	5113
8	100%	7744	2761	920	3681	4063	9175
9	100%	7744	2462	920	3382	4362	13537
10	100%	7744	2146	920	3066	4678	18216
11	100%	7744	1810	920	2730	5014	23230
12	100%	7744	1454	920	2374	5370	28600

Break even in year 6. Does not include land costs.

3. Processing Bartlett Pear

Preplant year

Table 3–1. Preplant year: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Machine labour, 4.2 hrs		55
Custom plowing		30
Fertilizer 10-20-20, 40 kg		15
Cover crop seed		24
Machine repairs, maintenance		23
Fuel		27
Interest on operating capital		46
Consulting fees		25
Tile drainage		1295
Miscellaneous (soil tests)		30
Land rental		
Total variable costs		1569
Fixed costs		
Machine depreciation		34
Machine investment interest		26
Other overhead		55
Land ownership		
Measurable fixed costs		115
Total measurable costs		1684

Table 3–2. Preplant year: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Subsoiling (1x)	0.7	9	7	7	23
Discing (2x)	1.4	18	18	20	57
Cultivating (1x)	0.7	9	8	9	27
Fertilizing (1x)	0.7	9	7	8	25
Seeding cover crop (1x)	0.7	9	10	15	33
Total machine labour	**4.2**	**55**	**50**	**60**	**165**

* includes maintenance, fuel and repair

Planting year

Table 3–3. Planting year: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 22 hrs		188
Machine labour, 16.9 hrs		220
Trees (201 trees per acre)		1960
Fertilizer 10-20-20, 40 kg		15
Insecticides		62
Fungicides		29
Herbicides		32
Cover crop seed		24
Machine repairs, maintenance		108
Fuel		108
Interest on operating capital		268
Consulting fees		25
Miscellaneous (tree guards)		130
Land rental		
Total variable costs		**3168**
Fixed costs		
Machine depreciation		120
Machine investment interest		82
Other overhead		110
Land ownership		
Measurable fixed costs		**312**
Total measurable costs		**3481**

Table 3–4. Planting year: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Marking, planting trees	10	86	0	0	86
Pruning	4	34	0	0	34
Weed control/hoeing	3	26	0	0	26
Tree guards	5	43	0	0	43
Total hand labour	22	188	0	0	188
Machine labour					
Pick up trees	0.5	7	8	5	19
Planting trees (tree planter)	2.0	26	21	20	67
Planting trees (1/2 ton truck)	2.0	26	33	19	77
Discing (2x)	1.4	18	18	21	58
Cultivating (2x)	1.4	18	15	14	47
Fertilizing (1x)	0.7	9	7	9	26
Seeding cover crop (1x)	0.7	9	10	15	34
Mowing (4x)	2.8	36	36	32	104
Weed spraying (1x)	0.7	9	8	7	24
Pesticide spraying (5x)	2.0	26	36	39	101
Subsoiling/aerating (1x)	0.7	9	4	7	21
Orchard maintenance	2.0	26	20	14	60
Total machine labour	**16.9**	**220**	**216**	**202**	**637**

* includes maintenance, fuel and repair

Second year

Table 3–5. Year 2: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 6 hrs		51
Machine labour, 14.4 hrs		187
Trees (2% replacement)		46
Ammonium nitrate, 40 kg		13
Muriate of potash, 40 kg		12
Insecticides		62
Fungicides		29
Herbicides		32
Cover crop seed		24
Machine repairs, maintenance		87
Fuel		88
Interest on operating capital		326
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**1013**
Fixed costs		
Machine depreciation		103
Machine investment interest		75
Other overhead		110
Land ownership		
Measurable fixed costs		**288**
Total measurable costs		**1301**

Table 3–6. Year 2: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	6	51	0	0	51
Defruiting	0	0	0	0	0
Total hand labour	**6**	**51**	**0**	**0**	**51**
Machine labour					
Replanting trees	2.0	26	21	20	67
Discing (1x)	0.7	9	12	17	38
Cultivating (1x)	0.7	9	8	10	27
Fertilizing (2x)	1.4	18	14	13	45
Seeding cover crop (1x)	0.7	9	10	15	34
Mowing (4x)	2.8	36	36	32	104
Weed spraying (2x)	1.4	18	14	12	44
Pesticide spraying (5x)	2.0	26	36	39	101
Subsoiling/aerating (1x)	0.7	9	4	7	21
Orchard maintenance	2.0	26	20	14	60
Total machine labour	**14.4**	**187**	**175**	**178**	**540**

* includes maintenance, fuel and repair

Third year

Table 3–7. Year 3: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 8 hrs		68
Machine labour, 11.3 hrs		147
Trees (1% replacement)		23
Ammonium nitrate, 80 kg		26
Muriate of potash, 80 kg		23
Insecticides		62
Fungicides		29
Herbicides		32
Machine repairs, maintenance		64
Fuel		68
Interest on operating capital		381
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**980**
Fixed costs		
Machine depreciation		71
Machine investment interest		52
Other overhead		110
Land ownership		
Measurable fixed costs		**233**
Total measurable costs		**1213**

Table 3–8. Year 3: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	8	68	0	0	68
Thinning	0	0	0	0	0
Total hand labour	**8**	**68**	**0**	**0**	**68**
Machine labour					
Replanting trees	1.0	13	11	13	37
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	12	44
Mowing (4x)	2.8	36	35	30	101
Weed spraying (2x)	1.4	18	14	11	42
Pesticide spraying (5x)	2.0	26	35	37	99
Subsoiling/aerating (1x)	0.7	9	5	7	21
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**11.3**	**147**	**132**	**123**	**402**

* includes maintenance, fuel and repair

Fourth year

Table 3–9. Year 4: Estimated cost of establishment

	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 10 hrs		86
Machine labour, 12.0 hrs		156
Trees (1% replacement)		23
Ammonium nitrate, 100 kg		32
Muriate of potash, 100 kg		29
Insecticides		62
Fungicides		29
Herbicides		41
Machine repairs, maintenance		66
Fuel		72
Interest on operating capital		443
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**1096**
Fixed costs		
Machine depreciation		73
Machine investment interest		54
Other overhead		110
Land ownership		
Measurable fixed costs		**237**
Total measurable costs		**1333**

Table 3–10. Year 4: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	10	86	0	0	86
Thinning	0	0	0	0	0
Total hand labour	**10**	**86**	**0**	**0**	**86**
Machine labour					
Replanting trees	1.0	13	11	13	37
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	12	44
Mowing (4x)	2.8	36	35	30	102
Weed spraying (3x)	2.1	27	20	15	62
Pesticide spraying (5x)	2.0	26	35	38	99
Subsoiling/aerating (1x)	0.7	9	4	7	20
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**12.0**	**156**	**138**	**127**	**422**

* includes maintenance, fuel and repair

Fifth year

Table 3–11. Year 5: Estimated cost of establishment

3.3 ton (30% yield)	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 38 hrs		328
Machine labour, 14.6 hrs		190
Ammonium nitrate, 110 kg		35
Muriate of potash, 110 kg		32
Insecticides		349
Fungicides		170
Herbicides		41
Machine repairs, maintenance		84
Fuel		98
Interest on operating capital		553
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**1936**
Fixed costs		
Machine depreciation		89
Machine investment interest		65
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**264**
Total measurable costs		**2200**
Contribution margin		
Gross income ($500/ton)		1650
Total variable costs		1936
Contribution margin (no land costs)		**-286**

Table 3–12. Year 5: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	15	128	0	0	128
Thinning	6.6	56	0	0	56
Harvest	16.8	144	0	0	144
Total hand labour	**38**	**328**	**0**	**0**	**328**
Machine labour					
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	13	44
Mowing (4x)	2.8	36	35	30	102
Weed spraying (3x)	2.1	27	20	15	62
Pesticide spraying (8x)	3.2	42	46	44	132
Distribute bins	1.2	16	11	7	33
Delivery	1.2	16	33	26	74
Subsoiling/aerating (1x)	0.7	9	4	7	20
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**14.6**	**190**	**182**	**154**	**525**

* includes maintenance, fuel and repair

Sixth year

Table 3–13. Year 6: Estimated cost of establishment

4.4 ton (40% yield)	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 50 hrs		431
Machine labour, 15.4 hrs		200
Ammonium nitrate, 120 kg		38
Muriate of potash, 120 kg		35
Insecticides		349
Fungicides		170
Herbicides		41
Machine repairs, maintenance		90
Fuel		106
Interest on operating capital		578
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**2095**
Fixed costs		
Machine depreciation		95
Machine investment interest		69
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**274**
Total measurable costs		**2369**
Contribution margin		
Gross income ($500/ton)		2200
Total variable costs		2095
Contribution margin (no land costs)		**105**

Table 3–14. Year 6: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	20	171	0	0	171
Thinning	8	68	0	0	68
Harvest	22.4	192	0	0	192
Total hand labour	**50**	**431**	**0**	**0**	**431**
Machine labour					
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	12	44
Mowing (4x)	2.8	36	35	30	102
Weed spraying (3x)	2.1	27	20	15	62
Pesticide spraying (8x)	3.2	42	46	44	132
Distribute bins	1.6	21	14	9	44
Delivery	1.6	21	44	34	99
Subsoiling/aerating (1x)	0.7	9	4	7	20
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**15.4**	**200**	**196**	**164**	**560**

* includes maintenance, fuel and repair

Seventh year

Table 3–15. Year 7: Estimated cost of establishment

6.6 ton (60% yeild)	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 76 hrs		646
Machine labour, 16.4 hrs		213
Ammonium nitrate, 130 kg		42
Muriate of potash, 130 kg		38
Insecticides		349
Fungicides		170
Herbicides		41
Machine repairs, maintenance		99
Fuel		113
Interest on operating capital		587
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**2355**
Fixed costs		
Machine depreciation		105
Machine investment interest		76
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**291**
Total measurable costs		**2646**
Contribution margin		
Gross income ($500/ton)		3300
Total variable costs		2355
Contribution margin (no land costs)		**945**

Table 3–16. Year 7: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	30	257	0	0	257
Thinning	12	103	0	0	103
Harvest	33.6	287	0	0	287
Total hand labour	**76**	**646**	**0**	**0**	**646**
Machine labour					
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	14	13	45
Mowing (4x)	2.8	36	36	31	104
Weed spraying (3x)	2.1	27	20	16	63
Pesticide spraying (8x)	3.2	42	46	46	134
Distribute bins	2.4	31	22	15	68
Delivery	1.8	23	50	38	111
Subsoiling/aerating (1x)	0.7	9	4	7	21
Orchard maintenance	2.0	26	20	14	59
Total machine labour	**16.4**	**213**	**212**	**181**	**606**

* includes maintenance, fuel and repair

Eighth year

Table 3–17. Year 8: Estimated cost of establishment

8.8 ton (80% yield)	Cost per acre ($)	
Variable costs	**Actual**	**Budget**
Hand labour, 106 hrs		906
Machine labour, 17.8 hrs		231
Ammonium nitrate, 140 kg		45
Muriate of potash, 140 kg		41
Insecticides		349
Fungicides		170
Herbicides		41
Machine repairs, maintenance		107
Fuel		127
Interest on operating capital		548
Consulting fees		25
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**2622**
Fixed costs		
Machine depreciation		112
Machine investment interest		82
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**304**
Total measurable costs		**2926**
Contribution margin		
Gross income ($500/ton)		4400
Total variable costs		2622
Contribution margin (no land costs)		**1778**

Table 3–18. Year 8: Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	40	342	0	0	342
Thinning	16	137	0	0	137
Harvest	50	428	0	0	428
Total hand labour	**106**	**906**	**0**	**0**	**906**
Machine labour					
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	14	13	45
Mowing (4x)	2.8	36	36	30	103
Weed spraying (3x)	2.1	27	20	15	62
Pesticide spraying (8x)	3.2	42	46	45	133
Distribute bins	3.2	42	29	19	89
Delivery	2.4	31	66	51	149
Subsoiling/aerating (1x)	0.7	9	4	7	20
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**17.8**	**231**	**234**	**194**	**659**

* includes maintenance, fuel and repair

Annual cost

Table 3–19. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	**Actual**	**Yield 11 ton**
Hand labour, 135 hrs		1154
Machine labour, 21 hrs		272
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		7
Insecticides		349
Fungicides		170
Herbicides		41
Cover crop seed		0
Machine repairs, maintenance		116
Fuel		150
Interest on operating capital		157
Bird control		0
Consulting fees		25
Irrigation		63
Miscellaneous (mulch, 1 bee hive, leaf)		183
Land rental		
Total variable costs		**2778**
Fixed costs		
Machine depreciation		119
Machine investment interest		88
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**317**
Total measurable costs		**3096**
Contribution margin		
Gross income ($500/ton)		5500
Total variable costs		2778
Contribution margin (no land costs)		**2722**

Table 3–20. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	50	428	0	0	428
Raking brush	3	26	0	0	26
Thinning	22	188	0	0	188
Harvest	60	513	0	0	513
Grading and packing	0	0	0	0	0
Total hand labour	**135**	**1154**	**0**	**0**	**1154**
Machine labour					
Brush removal (1x)	1.3	17	12	7	36
Discing (0x)	0	0	0	0	0
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	12	43
Mowing (4x)	2.8	36	35	28	99
Weed spraying (3x)	2.1	27	19	13	60
Pesticide spraying (8x)	3.6	47	48	45	140
Distribute and collect bins	4.0	52	34	20	107
Delivery	3.0	39	83	64	186
Subsoiling/aerating (1x)	0.7	9	4	6	19
Orchard maintenance	2.0	26	19	12	56
Total machine labour	**20.9**	**272**	**266**	**207**	**745**

* includes maintenance, fuel and repair

Total establishment cost

Table 3–21. Total establishment cost

	Actual	Budget
Pre-plant		1684
Planting		3481
Year 2		1301
Year 3		1213
Year 4		1333
Year 5		1949
Year 6		2034
Year 7		2179
Year 8		2260
Total		**17434**

Excludes harvest and delivery costs and does not include revenues for years 5, 6, 7 and 8. Does not include land costs.

Break even point

Table 3–22. Break even and profitability worksheet at 11.0 ton/acre yield

Year	Yield (%)	Revenue ($)	Variable costs ($)	Fixed costs ($)	Total ($)	Net cash flow ($)	Accum. profit ($)
Pre-plant	0%	0	1569	115	1684	-1684	-1684
Planting	0%	0	3168	312	3480	-3480	-5165
2	0%	0	1013	288	1301	-1301	-6466
3	0%	0	980	233	1213	-1213	-7679
4	0%	0	1096	237	1333	-1333	-9012
5	30%	1650	1936	264	2200	-550	-9563
6	40%	2200	2095	274	236[illegible]	-169	-9732
7	60%	3300	2355	291	264[illegible]	654	-9077
8	80%	4400	2622	304	2926	1474	-7603
9	100%	5500	3095	317	3412	2088	-5516
10	100%	5500	2951	317	3268	2232	-3284
11	100%	5500	2798	317	3115	2385	-899
12	**100%**	**5500**	**2636**	**317**	**2953**	**2547**	**1648**

Break even in year 12. Does not include land costs.

4. Other Tender Fruit – Annual

Processing Peach

Table 4–1. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 11 ton
Hand labour, 152 hrs		1300
Machine labour, 25.6 hrs		333
Ammonium nitrate, 125 kg		40
Muriate of potash, 125 kg		36
Foliar fertilizer - crop booster		7
Insecticides		174
Fungicides		153
Herbicides		30
Cover crop seed		24
Machine repair, maintenance		173
Fuel		179
Interest on operating capital		156
Bird control		0
Consulting fees		25
Irrigation		100
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**2762**
Fixed costs		
Machine depreciation		144
Machine investment interest		103
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**357**
Total measurable costs		**3119**
Contribution margin		
Gross income ($540 per ton)		5940
Total variable costs		2762
Contribution margin (no land costs)		**3178**

Table 4–2. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	45	385	0	0	385
Raking brush	3	26	0	0	26
Thinning	40	342	0	0	342
Harvest	64	547	0	0	547
Total hand labour	**152**	**1300**	**0**	**0**	**1300**
Machine labour					
Brush removal (1x)	1.0	13	9	6	28
Cultivating (3x)	2.1	27	20	16	63
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	9	14	33
Mowing (5x)	3.3	43	39	31	112
Weed spraying (2.5x)	1.8	23	17	12	52
Pesticide spraying (9x)	3.6	47	48	45	140
Distribute and collect bins	6.0	78	51	31	160
Delivery	3.0	39	124	64	227
Subsoiling/aerating (1x)	0.7	9	4	6	19
Orchard maintenance	2.0	26	18	12	56
Total machine labour	**25.6**	**333**	**352**	**247**	**932**

* includes maintenance, fuel and repair

High Density Processing Peach

Table 4–3. Estimated annual cost of production

403 trees per acre	Cost per acre ($)	
Variable costs	Actual	Yield 15 ton
Hand labour, 224 hrs		1915
Machine labour, 31.6 hrs		411
Ammonium nitrate, 200 kg		64
Muriate of potash, 125 kg		36
Foliar fertilizer - crop booster		7
Insecticides		174
Fungicides		153
Herbicides		30
Cover crop seed		24
Machine repair, maintenance		215
Fuel		224
Interest on operating capital		206
Bird control		0
Consulting fees		50
Irrigation		100
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**3641**
Fixed costs		
Machine depreciation		177
Machine investment interest		124
Cold storage, packing equipment		0
Other overhead		110
Land ownership		
Measurable fixed costs		**412**
Total measurable costs		**4053**
Contribution margin		
Gross income ($540/ton)		8100
Total variable costs		3641
Contribution margin (no land costs)		**4459**

Table 4–4. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	80	684	0	0	684
Raking brush	4	34	0	0	34
Thinning	50	428	0	0	428
Harvest	90	770	0	0	770
Total hand labour	**224**	**1915**	**0**	**0**	**1915**
Machine labour					
Brush removal (1x)	1.0	13	9	6	28
Cultivating (3x)	2.1	27	20	17	64
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (5x)	3.3	43	39	32	114
Weed spraying (2.5x)	1.8	23	17	12	53
Pesticide spraying (9x)	3.6	47	49	46	141
Distribute and collect bins	9.0	117	78	48	244
Delivery	4.0	52	165	85	302
Subsoiling/aerating (1x)	0.7	9	3	7	19
Orchard maintenance	4.0	52	36	23	111
Total machine labour	**31.6**	**411**	**439**	**302**	**1151**

* includes maintenance, fuel and repair

Nectarine

Table 4–5. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 7 ton
Hand labour, 220 hrs		1881
Machine labour, 31.8 hrs		413
Ammonium nitrate, 125 kg		40
Muriate of potash, 125 kg		36
Foliar fertilizer - crop booster		7
Insecticides		202
Fungicides		185
Herbicides		30
Cover crop seed		24
Machine repair, maintenance		188
Fuel		218
Interest on operating capital		203
Bird control		0
Consulting fees		25
Irrigation		100
Miscellaneous (leaf analysis)		32
Land rental		
Total variable costs		**3584**
Fixed costs		
Machine depreciation		166
Machine investment interest		114
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**920**
Total measurable costs		**4504**
Contribution margin		
Gross income ($1561/ton)		10927
Total variable costs		3584
Contribution margin (no land costs)		**7343**

Table 4–6. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	45	385	0	0	385
Raking brush	3	26	0	0	26
Thinning	50	428	0	0	428
Harvest	68	581	0	0	581
Grading and packing	54	462	0	0	462
Total hand labour	**220**	**1881**	**0**	**0**	**1881**
Machine labour					
Brush removal (1x)	1.2	16	11	7	33
Cultivating (3x)	2.1	27	20	16	63
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (5x)	3.3	43	39	31	113
Weed spraying (2.5x)	1.8	23	17	12	52
Pesticide spraying (11x)	4.4	57	55	49	161
Distribute and collect containers	11.2	146	96	58	300
Delivery	3.0	39	124	64	227
Subsoiling/aerating (1x)	0.7	9	3	6	19
Orchard maintenance	2.0	26	18	12	56
Total machine labour	**31.8**	**413**	**406**	**280**	**1099**

* includes maintenance, fuel and repair

Sweet Cherry - Standard

Table 4–7. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 6 ton
Hand labour, 414 hrs		3540
Machine labour, 31.7 hrs		412
Ammonium nitrate, 110 kg		35
Muriate of potash, 132 kg		38
Foliar fertilizer - crop booster		0
Insecticides		97
Fungicides		355
Herbicides		41
Cover crop seed		24
Machine repair, maintenance		186
Fuel		221
Interest on operating capital		314
Bird control		112
Consulting fees		0
Irrigation		0
Miscellaneous (mulch, 1 bee hive)		173
Land rental		
Total variable costs		**5549**
Fixed costs		
Machine depreciation		164
Machine investment interest		113
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**917**
Total measurable costs		**6466**
Contribution margin		
Gross income ($3329/ton)		19974
Total variable costs		5549
Contribution margin (no land costs)		**14425**

Table 4–8. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	40	342	0	0	342
Raking brush	4	34	0	0	34
Thinning	0	0	0	0	0
Harvest	255	2180	0	0	2180
Grading and packing	115	983	0	0	983
Total hand labour	**414**	**3540**	**0**	**0**	**3540**
Machine labour					
Brush removal (1x)	1.3	17	12	7	36
Cultivating (3x)	2.1	27	20	16	63
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (4x)	2.8	36	35	28	99
Weed spraying (3x)	2.0	26	18	13	57
Pesticide spraying (11x)	4.4	57	55	49	161
Distribute and collect containers	12.0	156	103	62	321
Delivery	3.0	39	124	64	227
Subsoiling/aerating (0x)	0	0	0	0	0
Orchard maintenance	2.0	26	18	12	56
Total machine labour	**31.7**	**412**	**407**	**277**	**1097**

* includes maintenance, fuel and repair

Sweet Cherry - Dwarf

Table 4–9. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 8 ton
Hand labour, 286 hrs		2445
Machine labour, 33.5 hrs		436
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		7
Insecticides		97
Fungicides		355
Herbicides		32
Cover crop seed		24
Machine repair, maintenance		203
Fuel		239
Interest on operating capital		260
Bird control		112
Consulting fees		0
Irrigation		63
Miscellaneous (mulch, 2 bee hives)		234
Land rental		
Total variable costs		4599
Fixed costs		
Machine depreciation		160
Machine investment interest		114
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		913
Total measurable costs		5513
Contribution margin		
Gross income ($3329/ton)		26632
Total variable costs		4599
Contribution margin (no land costs)		22033

Table 4–10. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	24	205	0	0	205
Raking brush	2	17	0	0	17
Thinning	0	0	0	0	0
Harvest	160	1368	0	0	1368
Grading and packing	100	855	0	0	855
Total hand labour	**286**	**2445**	**0**	**0**	**2445**
Machine labour					
Brush removal (1x)	0.8	10	7	5	22
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	12	43
Seeding cover crop (1x)	0.7	9	10	14	33
Mowing (4x)	2.8	36	34	28	99
Weed spraying (2x)	1.4	18	13	10	41
Pesticide spraying (11x)	4.4	57	55	48	160
Distribute and collect containers	16.0	208	127	60	396
Delivery	4.0	52	165	85	302
Subsoiling/aerating (0x)	0	0	0	0	0
Orchard maintenance	2.0	26	18	11	56
Total machine labour	**33.5**	**436**	**443**	**273**	**1151**

* includes maintenance, fuel and repair

Sour Cherry

Table 4–11. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 6 ton
Hand labour, 27 hrs		231
Machine labour, 21 hrs		273
Ammonium nitrate, 150 kg		48
Muriate of potash, 132 kg		38
Foliar fertilizer - crop booster		7
Insecticides		80
Fungicides		169
Herbicides		50
Cover crop seed		24
Machine repair, maintenance		168
Fuel		154
Interest on operating capital		159
Bird control		0
Consulting fees		0
Irrigation		0
Machine harvest ($.11/lb)		1320
Miscellaneous (1 bee hive, leaf analysis)		93
Land rental		
Total variable costs		**2814**
Fixed costs		
Machine depreciation		137
Machine investment interest		99
Cold storage, packing equipment		0
Other overhead		440
Land ownership		
Measurable fixed costs		**676**
Total measurable costs		**3490**
Contribution margin		
Gross income ($760/ton)		4560
Total variable costs		2814
Contribution margin (no land costs)		**1746**

Table 4–12. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	24	205	0	0	205
Raking brush	3	26	0	0	26
Thinning	0	0	0	0	0
Harvest	0	0	0	0	0
Grading and packing	0	0	0	0	0
Total hand labour	**27**	**231**	**0**	**0**	**231**
Machine labour					
Brush removal (1x)	0.6	8	6	4	18
Cultivating (3x)	2.1	27	20	18	66
Fertilizing (2x)	1.4	18	14	13	45
Seeding cover crop (1x)	0.7	9	10	15	34
Mowing (4x)	2.8	36	36	30	102
Weed spraying (3x)	2.0	26	19	14	60
Pesticide spraying (6x)	2.4	31	39	40	110
Distribute and collect bins	4.0	52	36	24	111
Delivery	3.0	39	124	64	227
Subsoiling/aerating (0x)	0	0	0	0	0
Orchard maintenance	2.0	26	19	13	58
Total machine labour	**21.0**	**273**	**322**	**236**	**830**

* includes maintenance, fuel and repair

Fresh Bartlett Pear

Table 4–13. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	**Actual**	**Yield 8 ton**
Hand labour, 164 hrs		1402
Machine labour, 28 hrs		363
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		7
Insecticides		349
Fungicides		201
Herbicides		41
Cover crop seed		0
Machine repair, maintenance		171
Fuel		193
Interest on operating capital		185
Bird control		0
Consulting fees		25
Irrigation		63
Miscellaneous (mulch, 1 bee hive, leaf analysis)		183
Land rental		
Total variable costs		**3275**
Fixed costs		
Machine depreciation		141
Machine investment interest		98
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**879**
Total measurable costs		**4154**
Contribution margin		
Gross income ($892/ton)		7136
Total variable costs		3275
Contribution margin (no land costs)		**3861**

Table 4–14. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	50	428	0	0	428
Raking brush	3	26	0	0	26
Thinning	27	231	0	0	231
Harvest	50	428	0	0	428
Grading and packing	34	291	0	0	291
Total hand labour	**164**	**1402**	**0**	**0**	**1402**
Machine labour					
Brush removal (1x)	1.3	17	12	7	36
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	[illegible]		13	11	43
Seeding cover crop (0x)	0	0	0	0	0
Mowing (4x)	2.8	36	34	28	98
Weed spraying (3x)	2.1	27	19	13	59
Pesticide spraying (9x)	3.6	47	48	44	139
Distribute and collect containers	11.0	143	93	54	290
Delivery	3.0	39	124	64	227
Subsoiling/aerating (1x)	0.7	9	3	6	19
Orchard maintenance	2.0	26	18	11	56
Total machine labour	**27.9**	**363**	**364**	**239**	**966**

* includes maintenance, fuel and repair

Fresh Bosc Pear

Table 4–15. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	**Actual**	**Yield 8 ton**
Hand labour, 160 hrs		1368
Machine labour, 27.6 hrs		359
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		7
Insecticides		349
Fungicides		201
Herbicides		30
Cover crop seed		0
Machine repair, maintenance		171
Fuel		191
Interest on operating capital		182
Bird control		0
Consulting fees		25
Irrigation		63
Miscellaneous (mulch, 1 bee hive, leaf analysis)		183
Land rental		
Total variable costs		**3221**
Fixed costs		
Machine depreciation		141
Machine investment interest		98
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**879**
Total measurable costs		**4100**
Contribution margin		
Gross income ($887/ton)		7096
Total variable costs		3221
Contribution margin (no land costs)		**3875**

Table 4–16. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	50	428	0	0	428
Raking brush	3	26	0	0	26
Thinning	25	214	0	0	214
Harvest	50	428	0	0	428
Grading and packing	32	274	0	0	274
Total hand labour	**160**	**1368**	**0**	**0**	**1368**
Machine labour					
Brush removal (1x)	1.3	17	12	7	36
Cultivating (0x)	0	0	0	0	0
Fertilizing (2x)	1.4	18	13	11	43
Seeding cover crop (0x)	0	0	0	0	0
Mowing (4x)	2.8	36	34	28	99
Weed spraying (2.5x)	1.8	23	17	12	52
Pesticide spraying (9x)	3.6	47	48	44	139
Distribute and collect containers	11.0	143	94	55	291
Delivery	3.0	39	124	64	227
Subsoiling/aerating (1x)	0.7	9	3	6	19
Orchard maintenance	2.0	26	18	11	56
Total machine labour	**27.6**	**359**	**362**	**239**	**960**

* includes maintenance, fuel and repair

Japanese Plum

Table 4–17. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	Actual	Yield 6 ton
Hand labour, 220 hrs		1881
Machine labour, 28.7 hrs		373
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		0
Insecticides		49
Fungicides		44
Herbicides		41
Cover crop seed		24
Machine repair, maintenance		177
Fuel		202
Interest on operating capital		182
Bird control		0
Consulting fees		0
Irrigation		63
Misc. (1 bee hive, leaf analysis)		93
Land rental		
Total variable costs		**3221**
Fixed costs		
Machine depreciation		150
Machine investment interest		105
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**895**
Total measurable costs		**4115**
Contribution margin		
Gross income ($1380/ton)		8280
Total variable costs		3221
Contribution margin (no land costs)		**5059**

Table 4–18. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	60	513	0	0	513
Raking brush	4	34	0	0	34
Thinning	30	257	0	0	257
Harvest	100	855	0	0	855
Grading and packing	26	222	0	0	222
Total hand labour	**220**	**1881**	**0**	**0**	**1881**
Machine labour					
Brush removal (1x)	1.3	17	11	7	35
Cultivating (2x)	1.4	18	14	12	44
Fertilizing (2x)	1.4	18	13	11	42
Seeding cover crop (1x)	0.7	9	9	14	33
Mowing (4x)	2.8	36	34	28	98
Weed spraying (3x)	2.1	27	19	13	59
Pesticide spraying (5x)	2.0	26	34	36	96
Distribute and collect containers	12.0	156	102	59	317
Delivery	3.0	39	124	64	227
Subsoiling/aerating (0x)	0	0	0	0	0
Orchard maintenance	2.0	26	18	11	55
Total machine labour	**28.7**	**373**	**379**	**255**	**1007**

* includes maintenance, fuel and repair

European Plum

Table 4–19. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	**Actual**	**Yield 6 ton**
Hand labour, 174 hrs		1488
Machine labour, 29.1 hrs		378
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		0
Insecticides		57
Fungicides		144
Herbicides		41
Cover crop seed		24
Machine repair, maintenance		177
Fuel		205
Interest on operating capital		176
Bird control		0
Consulting fees		0
Irrigation		63
Miscellaneous (mulch, 1 bee hive, leaf analysis)		273
Land rental		
Total variable costs		**3118**
Fixed costs		
Machine depreciation		151
Machine investment interest		106
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**897**
Total measurable costs		**4015**
Contribution margin		
Gross income ($1263/ton)		7578
Total variable costs		3118
Contribution margin (no land costs)		4460

Table 4–20. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	48	410	0	0	410
Raking brush	4	34	0	0	34
Thinning	12	103	0	0	103
Harvest	88	752	0	0	752
Grading and packing	22	188	0	0	188
Total hand labour	**174**	**1488**	**0**	**0**	**1488**
Machine labour					
Brush removal (1x)	1.3	17	11	7	35
Cultivating (2x)	1.4	18	14	12	44
Fertilizing (2x)	1.4	18	13	11	42
Seeding cover crop (1x)	0.7	9	9	14	33
Mowing (4x)	2.8	36	34	28	98
Weed spraying (3x)	2.1	27	19	13	59
Pesticide spraying (6x)	2.4	31	38	38	107
Distribute and collect containers	12.0	156	102	59	317
Delivery	3.0	39	124	64	227
Subsoiling/aerating (0x)	0	0	0	0	0
Orchard maintenance	2.0	26	18	11	55
Total machine labour	**29.1**	**378**	**382**	**257**	**1017**

* includes maintenance, fuel and repair

Apricot

Table 4–21. Estimated annual cost of production

	Cost per acre ($)	
Variable costs	**Actual**	**Yield 5 ton**
Hand labour, 196 hrs		1676
Machine labour, 28.7 hrs		373
Ammonium nitrate, 150 kg		48
Muriate of potash, 150 kg		44
Foliar fertilizer - crop booster		0
Insecticides		49
Fungicides		120
Herbicides		41
Cover crop seed		24
Machine repair, maintenance		177
Fuel		202
Interest on operating capital		185
Bird control		0
Consulting fees		0
Irrigation		63
Miscellaneous (mulch, 1 bee hive, leaf analysis)		273
Land rental		
Total variable costs		**3275**
Fixed costs		
Machine depreciation		150
Machine investment interest		105
Cold storage, packing equipment		200
Other overhead		440
Land ownership		
Measurable fixed costs		**895**
Total measurable costs		**4169**
Contribution margin		
Gross income ($1920/ton)		9600
Total variable costs		3275
Contribution margin (no land costs)		**6325**

Table 4–22. Operation costs

Operation	Labour (hours)	Labour ($)	Machine* ($)	Fixed cost ($)	Total ($)
Hand labour					
Pruning	48	410	0	0	410
Raking brush	4	34	0	0	34
Thinning	20	171	0	0	171
Harvest	100	855	0	0	855
Grading and packing	24	205	0	0	205
Total hand labour	**196**	**1676**	**0**	**0**	**1676**
Machine labour					
Brush removal (1x)	1.3	17	11	7	35
Cultivating (2x)	1.4	18	14	12	44
Fertilizing (2x)	1.4	18	13	11	42
Seeding cover crop (1x)	0.7	9	9	14	33
Mowing (4x)	2.8	36	34	28	98
Weed spraying (3x)	2.1	27	19	13	59
Pesticide spraying (5x)	2.0	26	34	36	96
Distribute and collect containers	12.0	156	102	59	317
Delivery	3.0	39	124	64	227
Subsoiling/aerating (0x)	0	0	0	0	0
Orchard maintenance	2.0	26	18	11	55
Total machine labour	**28.7**	**373**	**379**	**255**	**1007**

* includes maintenance, fuel and repair

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